

WHAT IS CLAIMED IS:

1 1. A substrate processing device in which a substrate is carried into
2 the device from one side of the device and is inverted in the device to be carried
3 out and returned to the same side, the device comprising:

4 a plurality of vacuum processing chambers for administering a process
5 on the substrate therein are longitudinally provided and hermetically connected to
6 each other;

7 a substrate carry system which passes through the vacuum chambers, the
8 substrate carry system includes:

9 an outward carry line that extends from a first position to an
10 inversion position within the device,

11 a return carry line from the inversion position to a second
12 position; and

13 at least one of a second outward carry line that extends from the
14 first position to the inversion position within the device and a second
15 return carry line from the inversion position to the second position,
16 wherein each of the carry lines has a different path.

1 2. The substrate processing device of claim 1, wherein the outward
2 carry line and the return carry line are parallel.

1 3. The substrate processing device of claim 1, wherein the outward
2 carry line or the return carry line is branched into a plurality of parallel lines.

1 4. The substrate processing device of claim 1, wherein the outward
2 carry line and the return carry line pass through at least one common vacuum
3 chamber.

1 5. The substrate processing device of claim 4, wherein a processing
2 device for heating or cooling the substrate on the outward carry line or the return
3 carry line is provided in the common vacuum chamber.

1 6. The substrate processing device of claim 1, wherein the carry line
2 extends within a horizontal surface, the carry system comprises a substrate holder
3 which holds the substrate upright in such a way that a plate surface thereof forms
4 an angle of holding to the horizontal of between 45° and 90°, and the carry
5 system further includes a horizontal movement mechanism that moves the
6 substrate holder through the plurality of vacuum processing chambers to a
7 perimeter vacuum chamber.

1 7. The substrate processing device of claim 6, wherein the substrate
2 holder holds two substrates simultaneously.

1 8. The substrate processing device of claim 7, wherein the substrate
2 holder holds the substrate upright in such a way that the plate surface thereof
3 forms an angle of holding to the horizontal of between 60° and 90°.

1 9. The substrate processing device of claim 6, wherein the
2 horizontal movement mechanism comprises a longitudinal movement mechanism
3 which affords movement of the substrate holder in the longitudinal direction which
4 constitutes the direction of the plurality of vacuum chambers, and a lateral
5 movement mechanism which affords movement in the lateral direction which
6 constitutes the horizontal direction perpendicular to the longitudinal direction.

1 10. The substrate processing device of claim 9, wherein the
2 longitudinal movement mechanism carries the substrate in such a way that the

3 plate surface of the substrate faces to the side with respect to the direction of
4 carry.

1 11. A substrate processing device in which a substrate is carried into
2 the device from one side of the device and is inverted in the device to be carried
3 out and returned to the same side, the device comprising:

4 a load lock chamber for loading and unloading the substrate at the same
5 side of the device;

6 a plurality of vacuum processing chambers for administering a process
7 on the substrate therein are longitudinally provided and hermetically connected to
8 each other;

9 an intermediate chamber arranged between the load lock chamber and the
10 plurality of vacuum processing chambers;

11 a substrate carry system which passes through the intermediate chamber
12 and the plurality of vacuum chambers, the substrate carry system includes:

13 an outward carry line that extends from a first position to an
14 inversion position within the device,

15 a return carry line from the inversion position to a second
16 position;

17 an intermediate line extending from the intermediate chamber to
18 the load lock chamber;

19 a branch line in the intermediate chamber along which the
20 substrate can be moved from the intermediate line to or from the outward
21 carry line and the return carry line; and

22 at least one of a second outward carry line that extends from the
23 first position to the inversion position within the device and a second
24 return carry line from the inversion position to the second position,
25 wherein each of the carry lines has a different path.

1 12. The substrate processing device of claim 11, wherein the outward
2 carry line and the return carry line are parallel.

1 13. The substrate processing device of claim 11, wherein the outward
2 carry line and the return carry line pass through at least one common vacuum
3 chamber.

1 14. The substrate processing device of claim 13, wherein a
2 processing device for heating or cooling the substrate on the outward carry line or
3 the return carry line is provided in the common vacuum chamber.

1 15. The substrate processing device of claim 1, further comprising:
2 an inversion chamber arranged at an end of the device opposite the load
3 lock chamber;
4 an inversion line in the inversion chamber along which the substrate can
5 be moved from the inversion line to or from the outward carry line and the return
6 carry line.